CLAIMS

What is claimed is:

1. A method of fingerprinting, comprising:

receiving a plurality of input datasets, each of said plurality of input datasets divided

5   into a plurality of input segments, at least one of said plurality of input datasets uniquely

marked;

selecting at least one input segment from one of at least two different input datasets of

said plurality of input datasets; and

arranging said selected at least one input segment to produce an output dataset having a

10   plurality of output segments, such that the number of output segments is equal to the number of

input segments in each input dataset.

2. The method of claim 1, wherein said at least one of said plurality of input datasets

includes an unmarked input dataset.

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3. The method of claim 1, wherein each uniquely marked input dataset is marked

using watermarking, such that the watermarking is imperceptible to human sensors.

4. The method of claim 1, wherein selecting at least one input segment includes

20   pseudo-randomly selecting at least one input segment from one of at least two different input

datasets.

5. The method of claim 4, further comprising:

generating a pseudo-random sequence to enable pseudo-random selection of the input

25   segment.

6. The method of claim 1, wherein selecting at least one input segment includes

pseudo-randomly selecting a sequence of input segments from one of at least two different

input datasets, such that the sequence is selected to provide a relatively high probability of

30   uniquely identifying said output dataset even when said output dataset is partially copied.

7.   The method of claim 6, wherein selecting a sequence of input segments includes building a pseudo-random sequence of segments, the pseudo-random sequence providing information about which input segment was used to build the corresponding output segment.

8.   The method of claim 7, wherein the pseudo-random sequence is represented as a representative master key (RMK).

9.   The method of claim 7, wherein the pseudo-random sequence is represented as a sequence of tuples.

10. The method of claim 7, further comprising:

burning said produced output dataset onto a physical medium.

11. The method of claim 10, further comprising:

linking said pseudo-random sequence of segments to said physical medium to uniquely identify each physical medium.

12.   A fingerprinting apparatus, comprising:

a plurality of receiving units to receive a plurality of input datasets, each of the plurality of input datasets divided into a plurality of input segments, at least one of the plurality of input datasets uniquely marked;

a selector to select at least one input segment from one of at least two different input datasets of the plurality of input datasets; and

at least one combiner to arrange the selected at least one input segment to produce an output dataset having a plurality of output segments, such that the number of output segments is equal to the number of input segments in each input dataset.

13.   The fingerprinting apparatus of claim 12, wherein the at least one of the plurality of input datasets includes an unmarked input dataset.

14. The fingerprinting apparatus of claim 12, further comprising:

a pseudo-random number generator to generate a sequence of pseudo-random numbers.

5   15. The fingerprinting apparatus of claim 14, wherein said selector is configured to

receive the sequence of pseudo-random numbers, such that said selector selects the at least one

input segment based on the received sequence of pseudo-random numbers.

16. The fingerprinting apparatus of claim 14, further comprising:

10   a media recording device to record the produced output dataset onto a physical medium.

17. The fingerprinting apparatus of claim 16, further comprising:

a storage device that links the sequence of pseudo-random numbers to the physical

medium to uniquely identify each physical medium.

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18. A fingerprinting system for fingerprinting media, comprising:

a receiver to receive said media divided into a plurality of media segments;

a first encoder to mark said media, said first encoder producing at least one marked

media, each of the at least one marked media divided into a plurality of marked media

20   segments;

a second encoder to compress said media and the at least one marked media;

a selector to select at least one media or marked media segment from one of said media

and the at least one marked media; and

at least one combiner to arrange the selected at least one media or marked media

25   segment to produce fingerprinted media having a plurality of fingerprinted segments, such that

the number of fingerprinted segments is equal to the number of media or marked media

segments in each media or marked media.

19. The fingerprinting system of claim 18, further comprising:

30   a pseudo-random number generator to generate a sequence of pseudo-random numbers.

20. The fingerprinting system of claim 19, wherein said selector is configured to receive the sequence of pseudo-random numbers, such that said selector selects a media or marked media segment based on the received sequence of pseudo-random numbers

21. The fingerprinting system of claim 19, further comprising;

a media recording device to record the produced fingerprinted media onto a physical medium.

22. The fingerprinting system of claim 21, further comprising:

a storage device that links the sequence of pseudo-random numbers to the physical medium to uniquely identify the medium.

23. The fingerprinting system of claim 21, wherein the physical medium includes DVD or video tape.

24. The fingerprinting system of claim 21, wherein the physical medium includes content downloaded from the Internet.

25. The fingerprinting system of claim 21, wherein the physical medium includes video-on-demand content transported as stream of data.

26. A method of identifying a source of media, comprising:

receiving said media, and identifying a plurality of segments arranged to form said media;

generating a representative master key (RMK) from the arrangement of the plurality of segments;

receiving a fingerprint and the source linked to the fingerprint; and

comparing the RMK to the fingerprint.

27. The method of claim 26, wherein the fingerprint includes a pseudo-random number sequence.

28. The method of claim 26, further comprising:

5   outputting the source linked to the fingerprint when the comparison between the RMK and the fingerprint indicates a match.

29. The method of claim 26, further comprising:

generating a first plurality of key sets from the RMK;

10   generating a second plurality of key sets from the fingerprint; and

comparing the first plurality of key sets to the second plurality of key sets.

30. The method of claim 29, further comprising:

receiving a threshold value; and

15   outputting the source linked to the fingerprint when the comparison between the first plurality of key sets and the second plurality of key sets results in a number of key set matches of more than the threshold value.

31. The method of claim 29, further comprising:

20   repeating said generating a second plurality of key sets from the fingerprint to produce key sets for a plurality of fingerprints;

receiving a threshold value; and

outputting sources linked the plurality of fingerprints, each source outputted when the comparison between the first plurality of key sets and the second plurality of key sets results in

25   a number of key set matches of more than the threshold value.

32. A computer program, stored in a tangible storage medium, for use in fingerprinting an output dataset having a plurality of output segments, the program comprising executable instructions that cause a computer to:

receive a plurality of input datasets, each of said plurality of input datasets divided into a plurality of input segments, at least one of said plurality of input datasets uniquely marked;

select at least one input segment from one of at least two different input datasets of said plurality of input datasets; and

5   arrange said selected at least one input segment to produce an output dataset having a plurality of output segments, such that the number of output segments is equal to the number of input segments in each input dataset.

33. A computer program, stored in a tangible storage medium, for use in identifying a

10   source of media, the program comprising executable instructions that cause a computer to:

receive said media, and identifying a plurality of segments arranged to form said media;

generate a representative master key (RMK) from the arrangement of the plurality of segments;

receive a fingerprint and the source linked to the fingerprint; and

15   compare the RMK to the fingerprint.

34. The computer program of claim 33, further comprising executable instructions that cause a computer to:

output the source linked to the fingerprint when the comparison between the RMK and

20   the fingerprint indicates a match.

35. The computer program of claim 33, further comprising executable instructions that cause a computer to:

generate a first plurality of key sets from the RMK;

25   generate a second plurality of key sets from the fingerprint; and

compare the first plurality of key sets to the second plurality of key sets.

36. The computer program of claim 35, further comprising executable instructions that cause a computer to:

30   receive a threshold value; and

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output the source linked to the fingerprint when the comparison between the first plurality of key sets and the second plurality of key sets results in a number of key set matches of more than the threshold value.

5   37.   The computer program of claim 35, further comprising executable instructions that cause a computer to:

repeat said generating a second plurality of key sets from the fingerprint to produce key sets for a plurality of fingerprints;

receive a threshold value; and

10   output sources linked the plurality of fingerprints, each source outputted when the comparison between the first plurality of key sets and the second plurality of key sets results in a number of key set matches of more than the threshold value.

38.   A fingerprinting apparatus, comprising:

15   a means for receiving a plurality of input datasets, each of the plurality of input datasets divided into a plurality of input segments, at least one of the plurality of input datasets uniquely marked;

a means for selecting at least one input segment from one of at least two different input datasets of the plurality of input datasets; and

20   at least one means for arranging the selected at least one input segment to produce an output dataset having a plurality of output segments, such that the number of output segments is equal to the number of input segments in each input dataset.

39.   A fingerprinting system for fingerprinting media, comprising:

25   a means for receiving said media divided into a plurality of media segments;

a means for marking said media, said first encoder producing at least one marked media, each of the at least one marked media divided into a plurality of marked media segments;

a means for compressing said media and the at least one marked media; and

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a means for selecting at least one media or marked media segment from one of said media and the at least one marked media; and

at least one means for arranging the selected at least one media or marked media segment to produce fingerprinted media having a plurality of fingerprinted segments, such that

5   the number of fingerprinted segments is equal to the number of media or marked media segments in each media or marked media.